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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/196,574	11/20/1998	KIRAN CHALLAPALI	PHA-23.540	9299

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EXAMINER	
LEE, RICHARD J	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/196,574	CHALLAPALI ET AL.	
	Examiner	Art Unit	
	Richard Lee	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Upon further review and consideration, the following grounds of rejections are deemed appropriate. The Examiner apologizes for any inconvenience that this may have caused for the applicants.

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 11-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Independent claim 11 sets forth computer-executable process steps to process image data from a stereo pair of images, the computer-executable process steps being stored on a computer-readable medium as described in the preamble, and thereafter recites a series of steps. Such recitation in the preamble is not considered statutory under 35 U.S.C. 101 since it pertains to functional descriptive material. And since dependent claims 12-13 are directed to further computational limitations, claims 11-13 as a whole do not fall within the statutory classes set forth in 35 U.S.C. 101.

Suggestion: Change the preamble "Computer-executable ... and comprising" as shown at lines 1-3 of claim 11 to "A computer program to process image data from a stereo pair of images, the computer program being stored on a computer-readable medium and comprising instructions to perform the following steps:" in order to overcome the 35 U.S.C. 101 rejection. Also, "computer-executable process steps" as shown at claim 12, line 1, claim 13, line 1, respectively should be changed to "computer program".

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Specification does not provide support for the particular features of "wherein a threshold is provided to determine whether an 8 x 8 DCT block is to be encoded at the first high level of quantization or the second lower level of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level" as claimed in claim 1, lines 20-23, claim 4, lines 15-18, claim 7, lines 15-18, claim 8, lines 14-17, claim 14, lines 14-17 ; the particular features of "wherein the encoding step uses a threshold to determine whether an 8 x 8 block is to be encoded at the first high level of quantization or the second lower level of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level as claimed in claim 11, lines 16-19; and the particular features of "wherein a threshold is provided to determine whether a block is to be encoded at the first high level of quantization or the second lower level of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level" as claimed in claim 15, lines 10-13.

The present invention is best exemplified with Figure 4 of the drawings. Foreground information detector 50 is provided with stereo images A and B (page 5, lines 19-20 of the Specification) for comparison in order to determine foreground pixels. Specifically, a disparity

threshold is chosen, such as the value of 7, so that any disparity above the threshold 7 indicates the pixel is foreground and any disparity below 7 indicates the pixel is background information (see page 6, lines 3-6 of the Specification). The output of the foreground detector 50 is one of the images, e.g. image B, and another block of data and indicates which pixels are foreground pixels, e.g. '1', and which are background pixels, e.g. '0' (page 6, lines 8-12 of the Specification). The outputs from the foreground information detector 50 are provide to a DCT block classifier 52 for creating 8 x 8 DCT blocks of the image and also binary blocks which indicate which DCT blocks of the image are foreground and which are background information (see Figure 3B and page 6, lines 12-15, page 7, lines 4-5 of the Specification). A threshold which can be predefined or vary as the bit rate capacity of the cannel varies is used to identify the block as a foreground block or a background block to encoder 56 (see page 6, lines 15-20 of the Specification). DCT blocks identified as foreground information (logic '1' DCT disparity block) will be encoded with a finer quantization level (see page 7, lines 1-9 of the Specification) and DCT blocks identified as background information (logic '0' disparity block) will be encoded coarsely, i.e. lower quantization level (see page 7, lines 8-9 of the Specification).

Though the applicants have indicated at page 13 of the previous amendment filed July 15, 2004 that the Specification at page 6, lines 15-20 and page 7, lines 8-9 provides support for the claimed features in question, such is not the case for the following reasons. As explained in the above, page 6, lines 15-20 of the Specification describes how a threshold which can be predefined or vary as the bit rate capacity of the cannel varies is used to identify the block as a foreground block or a background block to encoder 56. Similarly, page 7, lines 8-9 of the Specification describes how a DCT block is to be encoded coarsely, i.e. lower quantization level

coding, when a logic '0' DCT disparity block is identified by DCT block classifier 52. The sections of the Specification identified by the applicants deal with DCT block classification of either foreground or background DCT blocks with the use of a predefined or varying threshold. It is to be noted that the present invention is concerned with bit rate capacity of the channel since a varying threshold may be used to manipulate the selection of foreground and background DCT blocks (page 6, lines 15-20 of the Specification), and the subsequent quantization of the foreground and background DCT blocks. The disclosure therefore provides no support for a threshold to determine whether a block or an 8 x 8 DCT block is to be encoded at the first high level of quantization or the second lower level of quantization and without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level as respectively claimed. Instead, the first high level of quantization or second lower level of quantization is automatically provided for the DCT blocks once the DCT blocks have been identified/classified as foreground or background DCT blocks. In order words, while a threshold is used to classify the DCT blocks as either foreground or background DCT blocks, no threshold is used for determining whether a block or DCT block is to be encoded at the first high level of quantization or the second lower level of quantization and there is no teaching within the Specification for "without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level" as respectively claimed.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1) in view of Katata et al of record (5,815,601) and Vogel (5,412,431).

Stenger discloses a method of improving image segmentation of a video telephone scene as shown in Figures 3 and 4, and substantially the same apparatus for processing a stereo pair of images, comprising substantially the same a memory which stores process steps (i.e., as provided to carry out functions within Figure 4), and a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images (see page 4, lines 4-10 of translated article),

Stenger does not particularly disclose, though, the followings:

(a) a processor which executes the process steps stored in the memory so as to extract foreground information from the stereo pair of images in the form of foreground 8 x 8 DCT blocks of coefficients, to encode the foreground 8 x 8 DCT blocks of coefficients at a first high level of quantization and to encode background 8 x 9 DCT blocks of coefficients at a second lower level of quantization as claimed in claim 15; and

(b) wherein a threshold is provided to determine whether a block is to be encoded at the first high level of quantization or the second lower level of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level as claimed in claim 15.

Regarding (a), Katata et al discloses an image encoder as shown in Figure 1 and teaches the conventional use of a DCT block transformer (i.e., within 106 of Figure 1, and see column 5, lines 1-4) coupled to a foreground extractor (i.e., 101, 102 of Figure 1 and see column 4, line 45 to column 5, line 4) for providing foreground DCT blocks of coefficients, and an encoder (i.e.,

within 106 of Figure 1, and see column 5, lines 1-4) coupled to the DCT block transformer which encodes the foreground 8 x 8 DCT blocks of coefficients at a first high level of quantization and which encodes background 8 x 8 DCT blocks of coefficients at a second lower level of quantization (see column 1, lines 12-25, columns 7-8). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger and Katata et al references in front of him/her and the general knowledge of stereo image processings within video phone environments, would have had no difficulty in providing a DCT block transformer and an encoder for providing different quantization level processings for foreground and background image data, as taught by Katata et al for the stereo image videophone system within Stenger for the same well known image compressions purposes as claimed.

Regarding (b), Vogel discloses a device for controlling the quantizer of a hybrid coder as shown in Figures 1 and 2, and teaches the conventional use of a threshold value Lmax for determining fine (first high level) or coarse (second lower level) quantization (see column 2, lines 44-58), without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, and Vogel references in front of him/her and the general knowledge of selective quantization based on thresholds, would have had no difficulty in providing the use of a threshold system for determining a high level or lower lever of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level as taught by Vogel as part of the image compression system within Stenger and Katata et al for the same well known selective quantization for improving the quality certain images purposes as claimed.

8. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stenger of record (DE 3608489A1), Katata et al of record (5,815,601), and Vogel as applied to claim 15 in the above paragraph (7), and further in view of Monro et al of record (6,078,619) and Chun et el of record (6,038,258).

The combination of Stenger, Katata et al, and Vogel discloses substantially the same image processing device and system, method of encoding a stereo pair of images, computer executable process steps to process image data from a stereo pair of images, and apparatus for processing a stereo pair of images as above, further comprising substantially the same input which receives a stereo pair of images (see 10 of Figure 3 and 11, 12 of Figure 4 of Stenger); a foreground extractor (13-15 of Figure 4 and see page 4, lines 4-10 of translated article of Stenger) coupled to the input which compares location of like pixel information in each image to determine which pixel information is foreground pixel information and which pixel information is background pixel information, wherein the foreground extractor computes the difference in location of like pixels in each image and selects the foreground pixels as those pixels whose difference in location falls above a threshold distance; a DCT block classifier (i.e., within 106 of Figure 1 of Katata et al, and see column 5, lines 1-4) coupled to the foreground extractor (i.e., 101, 102 of Figure 1 of Katata et al, and see column 4, line 45 to column 5, line 4) for determining which DCT blocks of at least one of the images contain a threshold amount of foreground information; an encoder (i.e., within 106 of Figure 1 of Katata et al, and see column 5, lines 1-4) coupled to the DCT block classifier which encodes the DCT blocks having the threshold amount of foreground information with a first high level of quantization and which encodes DCT blocks having a less than the threshold amount of foreground information as

background information (i.e., background information is being provided by the threshold 15 of Figure 4 of Stenger et al) at a second lower level quantization (see column 1, lines 12-25 and columns 7-8 of Katata et al) relative to the first high level of quantization (i.e., different quantization step sizes pertaining to a selected area of interest are assigned, with high and low quantization level selections, see column 7, line 49 to column 8, line 24, column 9, line 38 to column 10, line 13 of Katata et al); wherein the stereo pair of images are received from a stereo pair of cameras spaced closely from one another in a video conference system (see Figure 3 of Stenger); the extracting includes identifying the location of like pixels in each of the stereo pair of images, calculating the difference between the locations of like pixels, and determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information (see page 4, lines 4-10 of translated article of Stenger); wherein the encoding step encodes entire 8 x 8 block of DCT coefficients at the first higher quantization level if the 8 x 8 block of DCT coefficients contains the predetermined amount of foreground pixel information (see column 1, lines 12-58, columns 7-8 of Katata et al); wherein the foreground pixel information is defined in terms of entire 8 x 8 blocks of DCT coefficients, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of foreground pixels are within the 8 x 8 block, otherwise the entire 8 x 8 block of DCT coefficients is encoded as background information (see column 1, lines 12-58, columns 7-8); the encoder providing bit stream information (i.e., the different quantization levels assigned for the specific areas are being transmitted to the decoder as shown in Figures 2 and 18 of Katata et al) for decoding of both the high level of quantization and lower level of quantization that are encoded; and wherein a

threshold is provided to determine whether an 8 X 8 DCT block is to be encoded at the first high level of quantization or the second lower level of quantization without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level of quantization (i.e., a threshold value Lmax is provided by Vogel for determining fine (first high level) or coarse (second lower level) quantization for DCT blocks, without varying an encoding rate of the second lower level of quantization to accommodate an encoding rate of the first high level, see column 2, lines 12-17, lines 44-58 and see 403, 404 of Figure 2 of Vogel).

The combination of Stenger, Katata et al, and Vogel does not particularly disclose, though, the followings:

(a) wherein at least a majority of a bandwidth is encoded at the first high quantization level and the first high/higher level of quantization as claimed in claims 1, 4, 7, 8, 11, and 14; and

(b) wherein a contour of a participant whose image is at least part of the stereo pair of images is not represented by a precise number of pixels but rather the contour is defined by a plurality of 8 X 8 DCT blocks as claimed in claims 1, 4, 7, 8, 11, and 14.

Regarding (a), it is noted that Katata et al does teach the particular finer quantization for areas of interest, such as the facial region (i.e., foreground data, see column 1, lines 12-25, column 4, lines 45-61, column 5, lines 5-20, column 7, line 26 to column 8, line 23, column 9, line 36 to column 10, line 13, Figures 1, 13, 14b, 17). It is well recognized in the art that finer quantization requires more bandwidth. And though Katata is silent as to where a majority of the bandwidth is encoded, it is nevertheless considered obvious that a majority of a bandwidth is encoded for the foreground data (i.e., facial region) since a finer quantization level is required.

In any event, Monro et al discloses an object oriented video system and teaches the conventional use of a bit rate manager 42 of Figure 1 for allocation of a majority of bandwidth for foreground information over background information (see column 2, lines 55-63, column 5, lines 30-37, column 6, lines 7-17). Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, Vogel, and Monro et al references in front of him/her and the general knowledge of foreground/background encoding of video data, would have had no difficulty in using the particular majority of bandwidth allocation for foreground data as taught by Monro et al to provide a majority of a bandwidth to be encoded at the first high quantization level and the first high/higher level of quantization for the foreground data of Katata et al and Stenger for the same well known image quality control and bandwidth allocation control purposes as claimed.

Regarding (b), it is noted that though silent in Katata et al, the contour DCT block coding as claimed is nevertheless considered obviously provided by the particular position, shape and/or facial image data coding within the area position and shape encoding section 102, parameter adjusting section 104 and encoding section 106 of Figure 1 of Katata et al (see column 4, line 45 to column 5, line 20 of Katata et al). In any event, Chun et al discloses an encoding system as shown in Figure 1 and teaches the conventional use of encoder 20 for encoding contour data with DCT transformations (see column 4, lines 38-44). And since Katata et al teaches 8 X 8 DCT block transformations, such specific block transformations may certainly be provided within Chun et al to thereby render obvious the claimed limitations. Therefore, it would have been obvious to one of ordinary skill in the art, having the Stenger, Katata et al, Vogel, and Chun et al references in front of him/her and the general knowledge of contour codings, would have had no

difficulty in providing the contour defined 8 X 8 DCT block coding as taught by the combination of Katata et al and Chun et al for the stereo image videophone system of Stenger for the same well known contour image compression purposes as claimed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (571) 272-7333. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

10/28/05